



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,270	07/10/2003	Michael Charles Grady	FA1106USNA	2476

23906 7590 10/26/2004

E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
BARLEY MILL PLAZA 25/1128
4417 LANCASTER PIKE
WILMINGTON, DE 19805

EXAMINER

ASINOVSKY, OLGA

ART UNIT PAPER NUMBER

1711

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/617,270	GRADY	
	Examiner	Art Unit	
	Olga Asinovsky	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>Sept. 15, 2003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prentice et al U.S. Patent 5,171,768.

The present invention is a process for producing a polymer comprising at least two polymerization stages, wherein in the first stage a mixture of monomers in the presence of an initiator is polymerizing under specified conditions including temperature and sub-reflux polymerization gage pressure to produce a partially polymerized polymer or macromonomer, and continuously polymerization a remaining portion of monomers in the presence of said produced polymer from the first stage under reflux polymerization condition at effective batch polymerization temperature.

Prentice discloses a method of producing carboxylated latex composition comprising a step of polymerizing a mixture of monomer(s) and an initiator at a temperature and under constant pressure, column 5, line 24 and column 7, line 55. In the first polymerization stage the partially polymerized latex of conjugated diene and styrene is produced. Other functional monomers can be included in the process to effect certain

polymerization and application properties, column 2, lines 63-65. The polymerization can be made in the aqueous phase, column 3, line 68. The process is carried out in a batch or semi-continuous process in two or more reaction zones, column 5, lines 11-15, under constant pressure of 130-210 psig, column 5, line 24. The partially polymerized latex is removed from the first reaction zone to the second reaction zone with an addition conjugated diene and an initiator for producing a copolymerized latex, column 6, lines 1-25. The first reaction zone has a temperature condition in the range of 65 to 85 C, the second reaction zone has a temperature higher for being at 75 to 93 C, column 5, lines 26-29. Reference discloses a process for producing the copolymer latex in at least two reactors such that the polymerization conditions are controlled by the temperature and pressure. Reference does not disclose a hybrid reactor, however, a batch or semi-batch reactor is inherent to a hybrid reactor for polymerization condition in the first polymerization stage.

The difference between the present claims and Prentice is that Prentice does not use terms sub-reflux condition in the first polymerization step and a reflux condition in the second polymerization stage. However, it would have been obvious to one of ordinary skill in the art to consider that the polymerization conditions under constant pressure and low temperature are readable in applicant's claimed sub-reflux conditions in the first polymerization stage for producing a partially polymerization latex; and the polymerization conditions under a constant pressure and higher temperature in the second polymerization stage would be readable in applicant's claimed reflux conditions, since these conditions are readable in applicant's claims 10, 11 and 21.

3. Claims 1-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al U.S. Patent 5,362,826 in view of Prentice et al U.S. Patent 5,171,768.

Berge discloses a method of producing macromonomer composition comprising a step of polymerizing a mixture of monomer(s) and an initiator at a temperature and under nitrogen positive pressure, column 10, lines 34-60 and column 12, line 54. The polymerization can be carried out in the presence of a polymerization medium, column 11, lines 28-30. The pressure was applied to avoid monomer reflux. The step of producing a macromonomer of the polymerized latex is equivalent to a step of making a polymerized portion of monomers into polymer under sub-reflux polymerization conditions in applicant's claims. Berge discloses that it is possible to produce terminally functional macromonomers for producing a higher degree functional terminated polymer, column 11, lines 63-68. Therefore, a second polymerization process can be applied in Berge's invention.

The difference between the present claims and Berge is the requirement in the present claims of a second copolymerization stage to cause polymerization of a remaining portion of monomers from the first stage with said polymer produced in the first stage under reflux conditions.

Prentice has been discussed in the paragraph 2 above.

Art Unit: 1711

It would have been obvious to one of ordinary skill in the art to modify the process of producing macromonomer composition in Berge's invention by a continuous polymerization of said macromonomer with addition monomer(s) in the second polymerization stage as disclosed by Prentice because any additional functional monomer is recognized by Berge.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art is relevant to show the state of the art knowledge. The closest reference to Berge has been discussed above.

5.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga Asinovsky whose telephone number is 571-272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

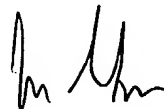
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Olga Asinovsky
Examiner
Art Unit 1711

O.A.

O.A.
October 20, 2004



James J. Seidler
Supervisory Patent Examiner
Technology Center 1700